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The 'Hazard Expertise' (HAZE) Knowledge-Based System: Description and User Guide

by
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Gloria R. Franczak
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The 'Hazard Expertise' (HAZE) program is a knowledge-based system for military installation personnel working with hazardous material/waste management. HAZE is an easy, informal way to share problems, ideas for solutions, and information on the latest technologies and environmental management strategies. The system allows self-contained updating, systematic analysis of alternatives, and selection of optimal technologies. The system provides a list of courses, meeting announcements, a personnel directory, a listing of pertinent literature and other special services. Example sessions demonstrate use of the commands.

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FOREWORD

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THE 'HAZARD EXPERTISE' (HAZE) KNOWLEDGE-BASED SYSTEM: DESCRIPTION AND USER GUIDE

1 INTRODUCTION

Background

Army Regulation (AR) 200-1 and Air Force Regulation (AFR 19-1) require the respective military installations to institute environmental protection programs directed towards all environmental media, including hazardous material and hazardous waste.¹ Furthermore, hazardous material resources are to be procured and used in a way that minimizes waste production. Designing and implementing these programs is a process that goes far beyond constructing appropriate facilities and training personnel. Treatment technologies are dynamic and their success depends on careful consideration of many variables. These variables range from the skill and knowledge of operations personnel at a particular installation to the current state-of-the-art limitations of recycling, substitution, and spill prevention methods selected. The ability to provide effective environmental protection at a given military installation requires both knowledge of Air Force or Army activities/constraints and expert technical judgment by managers of hazardous materials and wastes.

Several attempts have been made to provide data bases containing state-of-the-art information on alternative technological solutions to hazardous problems and on military-unique environmental problems.

Earlier data bases designed specifically for military users and their problems had the advantage of being tailored to specific needs. However, the cost of creating and updating these specially adapted data bases has been overwhelming. Cost mounts with the continual monitoring of technical literature; with the analysis, abstraction, and indexing of data; and with the data input and updates necessary to keep the system current. An ideal program would offer data bases relevant to Army and Air Force problems and policy, but without the high costs for monitoring and updating. With the proliferation of office automation and the increased computer literacy of the user group, the potential exists for reducing data development and updating expenses.

Objective

The objective of this effort was to create a knowledge-based communication medium for hazardous material/waste management personnel to access information on the latest technologies and environmental management strategies. The system was to allow for self-contained updating, systematic analysis of alternatives, and selection of optimal technologies.

¹ Army Regulation (AR) 200-1, *Environmental Protection Enhancement* (Department of the Army, 15 June 1982); Air Force Regulation (AFR) 19-1, *Pollution Abatement and Environmental Quality* (Headquarters, U.S. Air Force, 9 January 1978).

Approach

Information was collected from personnel dealing with hazardous materials and wastes, and other professionals in related fields at Air Force and Army installations. Their service requests, program expectations, and time constraints were used to modify and add features to a prototype system. Data obtained from hazardous material/waste managers, and statistics compiled on available technological data from installations were incorporated into a knowledge-based system.

The resulting system, Hazard Expertise (HAZE), provides (1) a vehicle for communication among personnel dealing with hazardous materials and wastes, (2) a data base for user contributions and updates, and (3) a variety of information services that can be continuously expanded.

Mode of Technology Transfer

After field testing of HAZE by environmental personnel in the Air Force and the Army offices, the system will be fielded as part of the Environmental Technical Information System (ETIS).

2 STRUCTURE AND CONTENT

The HAZE Knowledge Base

A knowledge base is an organized collection of information, stored on a computer, that focuses on a particular subject. Although the function of a knowledge base is as an information resource for focusing and refining any number of inquiries into a given topic, it is not a static collection of facts. A knowledge-based system such as HAZE is *dynamic and constantly evolving*: users actively expand the available store of information by posing and answering questions and making comments on specific topics. A knowledge-based system is a means for managing new ideas as well as a means for storing existing facts.

Knowledge-based systems such as HAZE, which allow user questions, answers, and comments, can become self-updating through vigorous use. The fundamental requirement is a broad pool of expertise among the users. Such broad expertise exists among the personnel in Corps offices, military installations, and educational institutions. For example, an Army installation may have developed some unique recycling strategies, while an Air Force base may have developed some excellent management practices for petroleum, oils, and lubricants (POL) dispensing. Indications are that collective expertise covers a wide range with many years of experience in different specializations. This experience is invaluable to new people in similar positions at other offices. HAZE offers a quick and easy method of sharing this expertise. A user-active system with the input of experienced and trained environmental personnel assures currency with the latest technologies available for dealing with resource problems and management programs.

Additional features include a catalog of installation-specific unpublished documents, a rated list of environmental courses, a library of rated publications, call-in information services, and computerized information resources.

Knowledge Base Structure

The current structure of the HAZE knowledge base is shown below. The listing is meant only to indicate the broad areas that may be addressed in each section. It is important to emphasize that while this is the current structure, it is completely dynamic and user-driven and thus subject to constant change. The HAZE software supports creation of subtopics at any time by any user and of new topics by the director acting upon users' suggestions.

Title:	Description:
1. dispose	Disposal methods.
2. label	Labeling questions.
3. manage	Good management practices.
4. minimize	Hazardous minimization
5. pcb's	Testing and storage of PCB's.
6. pest	Handling and Storage of pesticides.
7. pol	POL storage and dispensing.
8. spill	Spill control.
9. store	Storage of hazardous materials.
10. subs	Satisfactory substitutions.
11. transport	Transportation of hazardous materials.
12. treatment	Treatment of hazardous wastes.
13. directory	Names, telephone numbers, and projects.
14. library	Titles of hazardous literature and services.
15. meeting	Meetings and courses of interest.
16. comment	Comments and suggestions on topic areas, program use, or miscellaneous subjects.

3 USER INSTRUCTIONS

HAZE is available as an experimental profile of ETIS. ETIS can be accessed over WATS, TELENET, and commercial telephone lines using almost any kind of computer terminal (see Appendix A).

Accessing ETIS

After assembling a remote terminal, a modem, and a connection to a telephone line, and acquiring a login and password from USA-CERL's Environmental Division, ETIS can be accessed by a remote terminal. Dial the system's number (217/333-5067, WATS 800/637-0958). If there is no answer, the entire system is down for maintenance. Upon hearing a steady tone, connect your terminal/modem to the ETIS system as indicated in the manufacturer's instructions. After logging in with the correct name and password, you will receive system messages. Type "etis" at the prompt to start the system. HAZE is one of the systems under Miscellaneous in the main ETIS menu.

General ETIS Commands

These commands can be used throughout ETIS. The items in the left column show how the command is referred to.

< cr > or RETURN	When instructed to do so, depress the return key to initiate the next action.
Ctrl-d	Simultaneously press the control key and the letter d, to exit immediately to the ETIS login.
Ctrl-h	Use this to correct an input error--if the return key has not been pressed. It backs up the cursor one space at a time, erasing each character. This can be done as many times as necessary. Every symbol that has been backspaced over has been removed from the terminal memory. Therefore, if the first digit of a six-digit number has been mistyped, you must depress Ctrl-h six times and then retype all six digits. The corrected symbols will be overprinted on the paper or screen.
Del or Ctrl-s	To stop a long listing, depress the key marked Del (delete) or type a Ctrl-s.
Ctrl-q	If Ctrl-s is used, a Ctrl-q is necessary to start the listing again.

A path can be set up in your directory that will take you directly into HAZE. After logging in with the correct name and password, all you have to do is type "haze" in small letters at the ETIS prompt to enter HAZE without going through the ETIS menu.

The HAZE Software

Main Menu

After the HAZE system has been started, the following menu appears and the appropriate command is typed to accomplish the option desired:

HAZE Command (RETURN to see list):

Type:	To:
talk	Read and write comments on environmental topics.
new	Look at new comments.
pick	Limit the list of topics to read with 'new'.
help	Instructions on use.
bye	Leave the system.

The complete knowledge bases discussed in Chapter 2 are accessed by choosing "talk" from the menu (see Appendix B). In "talk", notes and responses are entered by using an editor (see Appendix C). The HAZE editor is a simple data input routine that accepts one line of input at a time and is ended by putting a period on a line by itself. HAZE users who are familiar with one of the UNIX editors can specify their preference for those routines when requesting a login to ETIS.

To see only those parts of the knowledge bases that are new since the last access, start the system using the "new" command (see Appendix D) after setting up "pick". If only certain knowledge bases are desired routinely, such as hazardous waste and air, the "pick" command is used to select these two knowledge bases. Then every time the "new" command is entered, only those two knowledge bases will be checked for new traffic. The complete listing of knowledge bases can still be accessed through the use of the "talk" command. The number and combination of knowledge bases selected in "pick" can be altered at any time.

The UNIX "notes" software has been used as a basis for the HAZE system. Complete documentation of the features of this software can be found in the *Notesfile Reference Manual*.²

² R.B. Essel and R. Kolstad, *Notesfile Reference Manual*, TR # UIUCDCS-R-82-1081 (University of Illinois, September 8, 1982).

Commands for the "TALK" Option

Use:	To:
space	Show the next page of the note/response.
< CR>	Go to the next note ignoring any response(s) to the current note.
-	Go back one screen. If used at the first page of a base note, go to the previous note. If used at the first page of a response, go to the previous response (or the base note from the first response).
w	If typed while looking at a screen of topics, enters a new topic. If typed while looking at note or a note response, enters a response.
i	Return to the list of topics for the major title presently entered.
q	Leave the current topic, go back to the main menu.
Ctrl-d	Return to computer command level, ignoring any further notesfiles in HAZE. No "new" information is updated.

Commands for the "NEW" Option

Use:	To:
j	Jump to the next unread note/response.
J	Jump to the next unread note, ignoring any further responses in the current note string.

4 SUMMARY AND RECOMMENDATIONS

This report describes a knowledge-based communication system for use by personnel dealing with hazardous materials and wastes to access information on the latest technologies related to their field. The HAZE knowledge base has been designed to tap the expertise in the Corps of Engineers District and Division offices, the environmental offices at military installations, and various departments at educational institutions by providing an efficient mechanism for enhancing communication among them. It is recommended that the system be operated in pilot mode for 1 year before transfer to the ETIS Support Center for continued operation.

APPENDIX A:

DIALING INTO THE ETIS SYSTEM

To call the computer that HAZE and ETIS run on:

1. Turn on power switches to terminal and modem.
2. Type AT on your terminal in capital letters. This command tells the Hayes modem to pay ATtention and the response OK should appear on the screen.
3. Type ATDT followed by the appropriate phone number.

The method of access is shown below. The commands that the user types are in bold print.

AT

OK

ATDT9,18006370958

CONNECT

< CR>

U of I Computing Services Office VAX 11/780 (uiucuxc)

4.2 BSD Unix /dev/ttyxx

login: **benning**

Password: **shipsatsea**

Communications Parameters

So that your terminal or computer can correctly transmit information to and from Osiris, it is necessary to set the proper communications settings. This is done on the terminal itself or through settings in the communications software on your personal computer. Check the appropriate manuals to determine how these settings are made.

Settings

Speed	1200 Baud
Parity	Even
Data Bits	7 (if 7 doesn't work, try 8)
Echo	Off (full duplex)
Stop Bits	1
Emulation	Some terminals use only one type, while others give you a choice. Check your manual and use whichever works best (usually VT100). The same applies for communications software. If available, VT100 or VT102 is recommended.

Setting Proper Emulation

Since the HAZE System works by using the UNIX "notes" system, it is necessary to set the proper terminal emulation on the Pyramid computer. Earlier, you set the emulation either on your terminal or through your communications software. Now you must tell Osiris the emulation you have chosen. The recommended terminal emulation setting is "VT100". If the VT100 setting is not available, choose whatever setting is available on your terminal or communications software. If you have difficulty determining the proper setting, contact USA-CERL.

The commands for setting the terminal emulation to "VT100" are:

```
$ TERM=vt100 < cr >  
$ export TERM < cr >
```

This makes your terminal or computer "cursor addressable." Even so, do NOT use the arrow keys as a way to direct the cursor. The arrow keys are not affected and will cause incorrect commands to be processed. Follow the instructions given in the main text of this manual.

APPENDIX B:

EXAMPLE SESSION FOR READING

Following is an example session from the HAZE system that portrays the type of interaction that the system is designed to support. Each set of lines sets off the contents of a single screen. User inputs are in bold print.

Welcome to HAZE

This is a communication system and discussion forum dedicated to information, technology, management, and programs for hazardous materials and wastes.

In addition, HAZE provides a list of courses, special services, and position openings in the hazardous area. An up-to-date directory of personnel in the field is also contained in HAZE.

Questions about the use of the system should be directed to Dr. Diane Mann at comm 800-USA-CERL.

HAZE Command (RETURN to see list): < **cr** >

Type: To:

talk	Read and write comments on environmental topics.
new	Look at new comments.
pick	Limit the list of topics to read with the 'new' command.
help	Instructions on use.

HAZE Command (RETURN to see list): **talk** < **cr** >

Title:	Description:
1. dispose	Disposal methods.
2. label	Labelling questions.
3. manage	Good management practices.
4. minimize	Hazardous minimization
5. pcb's	Testing and storage of PCB's.
6. pest	Handling and Storage of pesticides.
7. pol	POL storage and dispensing.
8. spill	Spill control.
9. store	Storage of hazardous materials.
10. subs	Satisfactory substitutions.
11. transport	Transportation of hazardous materials.
12. treatment	Treatment of hazardous wastes.
13. directory	Names, telephone numbers, and projects.
14. library	Titles of hazardous literature and services.
15. meeting	Meetings and courses of interest.
16. comment	Comments and suggestions on topic areas, program use, or miscellaneous subjects.

Type 'quit' to leave menu.

Enter title: 5 < cr >

haze.pcb		10:40 am Mar 21, 1988
3/17/88	1 PCB STORAGE	6 Anonymous
	2 IDENTIFYING NON-PCB TRANSFORMERS	Anonymous
3/19	3 PCB UPTAKE FW BIOTA	1 Anonymous
**** End of Notes ****		

(type) 1 < cr >

Read note > 1

Note 1
Anonymous

haze.pcb
PCB Storage

6 responses
4:14 pm Mar 17, 1988

"PCB Storage"

Would appreciate information on storing PCB transformers prior to contract disposal. Request information on most economical container in which to hold 4 foot high and 18 inch diameter electrical transformers awaiting contractor pick-up and disposal.

(Press the space bar once.)

Note 1
Anonymous

haze.pcb
Response 1 of 6

4:34 pm Mar 17, 1988

Why do you need containerize transformers. We just put them in our pcb storage facility if non leaking. However, there is a company that manufactures some two and four transformers storage cartons. I don't remember the name but I recall they are tremendously expensive.

(Press the space bar a few more times and you'll eventually see this:)

Note 5
Anonymous

haze.pcb
Response 5 of 6

4:36 pm Mar 17, 1988

May '86 issue of "Government Product News" page 63 shows PCB salvage drums mfgd by International C Pack Corporation, Hurst, Texas -- does not give cost etc -- may be worth looking into.

(Press the space bar once)

type q

Title:	Description:
1. dispose	Disposal methods.
2. label	Labeling questions.
3. manage	Good management practices.
4. minimize	Hazardous minimization
5. pcb's	Testing and storage of PCB's.
6. pest	Handling and Storage of pesticides.
7. pol	POL storage and dispensing.
8. spill	Spill control.
9. store	Storage of hazardous materials.
10. subs	Satisfactory substitutions.
11. transport	Transportation of hazardous materials.
12. treatment	Treatment of hazardous wastes.
13. directory	Names, telephone numbers, and projects.
14. library	Titles of hazardous literature and services.
15. meeting	Meetings and courses of interest.
16. comment	Comments and suggestions on topic areas, program use, or miscellaneous subjects.

Type 'quit' to leave menu.

Enter title: 5 < cr >

haze.pcb		10:51 am Mar 21, 1988
3/17/88	1 PCB STORAGE	6 Anonymous
	2 IDENTIFYING NON-PCB TRANSFORMERS	Anonymous
3/19	3 PCB UPTAKE FW BIOTA	1 Anonymous

**** End of Notes ****

Read note > 2 < cr >

Note 2	haze.pcb	
Anonymous	IDENTIFYING NON-PCB TRANSFORMERS	5:06 pm Mar 17, 1988

Fort Dix has significantly removed the number of in-service and out-of-service electrical transformers requiring PCB testing by obtaining statements from the transformer manufacturers certifying that their products manufactured 1 July 1979 or later were filled with non-PCB mineral oil in accordance with 40CFR761. These letters usually contain instructions for using the transformer's serial numbers to determine the date of manufacture. Fort Dix found that many transformers manufactured after 1 July 1979 did not contain a non-PCB certification statement. DRMO may request a

statement on the turn-in document certifying the transformer has not been rebuilt or refilled. Point of Contact for further information is Mr. Thomas Higgins, AUTOVON 944-3191.

Reprinted from TRADOC Bulletin 6.86

< cr >

(Because < cr > return is hit instead of space bar, the next note is brought up and the response to note 2 is skipped over)

Note 3
Anonymous

haze.pcb
PCB UPTAKE FW BIOTA

1 response
12:58 pm Mar 19, 1988

"PCB UPTAKE FW BIOTA"

PCB Uptake in Freshwater Biota

Our office is involved in a project that requires information on bioaccumulation factors (BAFs) or bioconcentrated factors (BCFs) associated with the uptake of PCBs by freshwater fish, benthos, plankton, protozoans, or bacteria. This information will be used to assess impacts of dredging sediments contaminated with PCBs and placed in a confined disposal facility (CDF) compared to the existing conditions of exposure to this contaminant. Any information would be helpful. Comments can be addressed directly under this note or sent to our office (ETIS) mailbox which is called "ncc". Please mark all comments to the attention of Paul Whitman.

Paul Whitman
Chicago Dist.
U.S. Army Corps of Engineers
Chicago, Il. 60604
ph:FTS-(312)-353-7795

q (Topic menu appears again.)

Enter title: quit < cr >

(Main menu appears.)

type bye < cr >

(End of Session.)

APPENDIX C:

EXAMPLE SESSION FOR WRITING

Following is an example session from the HAZE system that demonstrates how to write in HAZE at the (1) response or (2) note level. Each set of lines sets off the contents of a single screen. User inputs are in bold print.

(1) To write at the response level:

Welcome to HAZE

This is a communication system and discussion forum dedicated to information, technology, management, and programs for hazardous materials and wastes.

In addition, HAZE provides a list of courses, special services, and position openings in the hazardous area. An up-to-date directory of personnel in the field is also contained in HAZE.

Questions about the use of the system should be directed to Dr. Diane Mann at comm 800-USA-CERL.

HAZE Command (RETURN to see list): < **cr** >

Type:

To:

talk
new
pick
help

Read and write comments on environmental topics.
Look at new comments.
Limit the list of topics to read with the 'new' command.
Instructions on use.

HAZE Command (RETURN to see list): **talk** < **cr** >

Title:	Description:
1. dispose	Disposal methods.
2. label	Labelling questions.
3. manage	Good management practices.
4. minimize	Hazardous minimization
5. pcb's	Testing and storage of PCB's.
6. pest	Handling and Storage of pesticides.
7. pol	POL storage and dispensing.
8. spill	Spill control.
9. store	Storage of hazardous materials.
10. subs	Satisfactory substitutions.
11. transport	Transportation of hazardous materials.
12. treatment	Treatment of hazardous wastes.
13. directory	Names, telephone numbers, and projects.
14. library	Titles of hazardous literature and services.
15. meeting	Meetings and courses of interest.
16. comment	Comments and suggestions on topic areas, program use, or miscellaneous subjects.

Type 'quit' to leave menu.

Enter title: 1 < cr >

haze.dispose

2:37 pm Mar 21, 1988

3/17/88

1 WASTE BATTERY ACID DISPOSAL

1 Anonymous

3/19

2 EPA/NRC LAND DISPOSAL

Anonymous

3 RCRA-REPORTS: SMALL QUANTITY GENS

Anonymous

**** End of Notes ****

(type) 1 < cr >

Read note > 1

Note 1	haze.dispose	1 response
Anonymous	WASTE BATTERY ACID DISPOSAL	3:52 pm Mar 17, 1988

"WASTE BATTERY ACID DISPOSAL

Current designs for new facilities on Fort Carson include battery shops. Waste acid is neutralized with sodium bicarb resulting in heavy metals being discharged to the treatment facility. Disposal of waste acid through DRMO costs \$8.00/gal. Any ideas for environmentally sane and cost effective disposal methods? AV 691-4828/2022.

(type) w

(Typing w while reading a note starts the process for writing a response to that note. After the response is typed, the user goes to a blank line and types a period to enter the response into the bulletin board)

Edit Response Text:

Enter Message. When done enter a period (.) on a new line.

This is only a test.

(type) .

Do you wish this response to be anonymous? (y/n): (type) **y**

Do you REALLY wish this response to be anonymous? (y/n): (type) y

(Now you will be shown how the message appears.)

Note 1
Anonymous

haze.dispose
Response 2 of 2

3:15 pm Mar 21, 1988

This is only a test.

(type) i

(Now you can see the change in the number of responses.)

```
haze.dispose                                     3:14 pm  Mar 21, 1988
```

3/17/88	1 WASTE BATTERY ACID DISPOSAL	2 Anonymous
3/19	2 EPA/NRC LAND DISPOSAL	Anonymous
	3 RCRA-REPORTS: SMALL QUANTITY GENS	Anonymous

*** End of Notes ***

(type) q

(Now you will receive the Title menu.)

(2) To write at the note level:

Title:	Description:
1. dispose	Disposal methods.
2. label	Labelling questions.
3. manage	Good management practices.
4. minimize	Hazardous minimization
5. pcb's	Testing and storage of PCB's.
6. pest	Handling and Storage of pesticides.
7. pol	POL storage and dispensing.
8. spill	Spill control.
9. store	Storage of hazardous materials.
10. subs	Satisfactory substitutions.
11. transport	Transportation of hazardous materials.
12. treatment	Treatment of hazardous wastes.
13. directory	Names, telephone numbers, and projects.
14. library	Titles of hazardous literature and services.
15. meeting	Meetings and courses of interest.
16. comment	Comments and suggestions on topic areas, program use, or miscellaneous subjects.

Type 'quit' to leave menu:

Enter title: 1 < cr >

haze.dispose

3:28 pm Mar 21, 1988

3/17/88	1 WASTE BATTERY ACID DISPOSAL	2 Anonymous
3/19	2 EPA/NRC LAND DISPOSAL	Anonymous
	3 RCRA-REPORTS: SMALL QUANTITY GENS.	1 Anonymous

**** End of Notes ****

(Type:) w

(Typing w while viewing the Note-List Menu begins the process for writing a note. After the note is typed, the user goes to a blank line and types a period to enter the note into the bulletin board)

Edit Note Text:
Enter Message. When done enter a period (.) on a new line.

This is a test.

(type) .

Do you wish this note to be anonymous? (y/n): (type) **y**

Do you REALLY wish this note to be anonymous? (y/n): (type) **y**

Note Title: (type) **TEST**

(Now you will be shown how the message appears.)

Note 4
anonymous

haze.dispose
TEST

3:25 pm Mar 21, 1988

This is a test.

(type) **i**

(Now you will see the new note, number 4, in the list.)

haze.dispose

3:28 pm Mar 21, 1988

3/17/88	1 WASTE BATTERY ACID DISPOSAL	2 Anonymous
3/19	2 EPA/NRC LAND DISPOSAL	Anonymous
	3 RCRA-REPORTS: SMALL QUANTITY GENS.	1 Anonymous
3/21	4 TEST	Anonymous

**** End of Notes ****

Enter title: **q < cr >**

Title:	Description:
1. dispose	Disposal methods.
2. label	Labelling questions.
3. manage	Good management practices.
4. minimize	Hazardous minimization
5. pcb's	Testing and storage of PCB's.
6. pest	Handling and Storage of pesticides.
7. pol	POL storage and dispensing.
8. spill	Spill control.
9. store	Storage of hazardous materials.
10. subs	Satisfactory substitutions.
11. transport	Transportation of hazardous materials.
12. treatment	Treatment of hazardous wastes.
13. directory	Names, telephone numbers, and projects.
14. library	Titles of hazardous literature and services.
15. meeting	Meetings and courses of interest.
16. comment	Comments and suggestions on topic areas, program use, or miscellaneous subjects.

Type **'quit'** to leave menu.

Enter title: **quit** < **cr** >

HAZE command (RETURN to see list):

Type:	To:
talk	Read and write comments on environmental topics.
new	Look at new comments.
pick	Limit the list of topics to read with the 'new' command.
help	Instructions on use.
bye	Leave the system.

HAZE command (RETURN to see list): (type) bye < **cr** >

(End of Session.)

APPENDIX D:

EXAMPLE SESSION FOR "PICK" AND "NEW"

PICK and **NEW**, two of the four options listed in the main menu, are important time-savers for the regular user. Following is an example session from the HAZE system that demonstrates how to use **PICK** and **NEW** in HAZE. Each set of lines sets off the contents of a single screen. User inputs are in bold print.

Welcome to HAZE

This is a communication system and discussion forum dedicated to information, technology, management, and programs for hazardous materials and wastes.

In addition, HAZE provides a list of courses, special services, and position openings in the hazardous area. An up-to-date directory of personnel in the field is also contained in HAZE.

Questions about the use of the system should be directed to Dr. Diane Mann at comm 800-USA-CERL.

HAZE Command (RETURN to see list): < **cr** >

Type: To:

talk	Read and write comments on environmental topics.
new	Look at new comments.
pick	Limit the list of topics to read with the 'new' command.
help	Instructions on use.
bye	Leave the system.

HAZE Command (RETURN to see list): **pick** < **cr** >

dispose
 New file. Add it? y
 label
 File exists. Keep it? y
 manage
 New file. Add it? y
 minimize
 New file. Add it? y
 pcb's
 File exists. Keep it? y
 pest
 File exists. Keep it? y
 pol
 File exists. Keep it? y
 spill
 New file. Add it? y
 store
 New file. Add it? y
 subs
 New file. Add it? y
 transport
 New file. Add it? y
 treatment
 New file. Add it? y
 directory
 File exists. Keep it? y
 library
 New file. Add it? y
 meeting
 New file. Add it? y
 comment
 New file. Add it? y

HAZE Command (RETURN to see list): **new** < **cr** >

(If no new responses or notes have been added since the user last used the bulletin board, the file titles will be going through very rapidly)

haze.*****

(The *s represent the titles that will be flashed very quickly; these titles may include:

haze.label
 haze.pest
 haze.pol
 haze.spill
 haze.store
 haze.subs
 etc.
 haze.treatment

At the end you will again receive the command prompt)

HAZE Command (RETURN to see list): **bye** < **cr** >

(User types bye and completes a check of the bulletin board in less than ten seconds if there are no new entries since the last use of the bulletin board.)

(Session ended.)

(The following example illustrates the use of **NEW**, from the main menu, if a new note has been added since the user last used the bulletin board. Titles will quickly flash by on the screen until the title of the section that has the new note is reached.)

Note 1	haze.comment	1 response
Anonymous	TOXICITY OF METHYLENE CHLORIDE	1:06 pm Mar 19, 1988

"Toxicity of Methylene Chloride"

Our office is working on a flood reservoir project that may allow contaminated groundwater to enter a nearby stream. This groundwater is contaminated with methylene chloride, also known as dichloromethane. In order to assess possible impacts of this contaminate on the aquatic stream environment, we need information on the toxicity of this chemical on freshwater organisms. With the exception of the reference by Bayard et al. (1985), data on this topic appears to be scarce. Can anyone tell me where to get more information on this topic? A list of references would be particularly useful. This information can be sent to the office address below or to our office's electronic mailbox. Our ETIS mailbox name is NCC. All information would be greatly appreciated and should be marked to the attention of Paul Whitman. Thanks.

Paul Whitman
NCCPD-S
Chicago Dist.
219 S. Dearborn
Chicago, Il. 60406

(type) q

paats.***** (The *s represent the titles that are flashed quickly.)

HAZE Command (RETURN to see list): **bye** < **cr** >

(The following example illustrates the use of **NEW** if a new response has been added since the user last used the bulletin board. Titles will flash by quickly on the screen until the title of the section that has the note with the new response is reached. When the note appears on the screen, the user must press the space bar until new response appears on the screen. If the new response is the second response, the user needs to press the space bar twice; once to move from the note to response 1 and once to move from response 1 to the new response.)

Note 1
Anonymous

haze.comment
Response 1 of 1

1 response
1:08 pm Mar 19, 1988

Mr Whitman:

The following toxicity data for methylene chloride was obtained from the Chemical Information System OHMTADS database, which was originally put together by EPA/NIH and is now vended by several different commercial outfits. It contains data from diverse sources. I also searched the Coast Guard CHRIS database and Occupational Health Services HAZARDLINE System, but didn't find much in them. I have forwarded the voluminous listings to from all these systems to your ETIS mailbox, and have appended to this note a summary of the toxicity data only.

I am not aware of a handbook that provides listings of aquatic toxicity values for a number of chemicals. I would suggest that you have a computerized bibliography search of the literature done using "methylene chloride" and "aquatic toxicity" as keywords. This will produce abstracts of technical papers that have been published on this topic. The big environmental bibliographic databases to search are Pollution Abstracts, Compendex, Chem Abstracts, and Environline. Your librarian can provide this service for you.

(Now press the space bar once to continue this response)

(Now type a **q** to quit and the remaining titles will flash by.)

HAZE Command (RETURN to see list): **bye <cr>**

(End of Session.)

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43 CSG/DEEV
Anderson AFB APO 96334-5000

HQAFSC/DEV
Andrews AFB, MD 20334-5000

1776 ABW/DEEV
Andrews AFB, MD 20331-5000

AEDC/DEV
Arnold AFB, TN 37389

56 CSB/DEN
Avon Park AFR, FL 33225-5000

Environmental Office
Barksdale AFB, LA 71110-5000

9 CSG/DEEV
Beale AFB, CA 95903-5000

67 CSG/DEEV
Bergstrom AFB, TX 78743

343 CSG/DEEV
Bleilson AFB, AK 99702

97 CSG/DEEV
Blytheville AFB, AR 72317-5000

6570 ABG/DE
Brooks AFB, TX 78235-5000

27 CSG/DEEV
Cannon AFB, NM 88103

7 CSG/DEEV
Carswell AFB, TX 76127-5000

93 BMW/CVE
Castle AFB, CA 95342-5000

437 ABG/DE
Charleston AFB, SC 29404-5045

3345 ABG/DE
Chanute AFB, IL 61868-5046

14 ABG/DE
Columbus AFB, MS 39701-5000

1010 CES/DEEV
Cheyenne Mountain AFS, CO 80912-5605

836 CSG/DEEV
Davis-Monthan AFB, AZ 85707-5000

94 CSG/DEEV
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96 CSG/DEEV
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44 CSG/DEEV
Ellsworth AFB, SD 57706-5000

HQ AAC/DEPV
Elmendorf AFB, AK 99506-5001

21 CSG/DEEV
Elmendorf AFB, AK 99506-5000

11 TCG/LGD
Elmendorf AFB, AK 99506

92 CSG/DEEV
Fairchild AFB, WA 99011-5000

831 CSG/DEV
George AFB, CA 92394-5000

3480 CES/DE
Goodfellow AFB, TX 76908-5000

321 CSG/DEEV
Grand Forks AFB, WA 58205-5000

416 CSG/DEEV
Griffiss AFB, NY 13441-5000

305 CSG/DEEV
Grissom AFB, IN 46971-5000

3245 ABG/DEEV
Hanscom AFB, MA 01731-5000

ESD/DEP
Hanscom AFB, MA 01731

2849 ABG/DEVW
Hill AFB, UT 84056

31 CSG/DEEV
Homestead AFB, FL 33039-5000

834 CSG/DE
Hurlburt Field, FL 32544-5000

3380 CES/DE
Keesler AFB, MS 39534-5000

SA ALC/EM
Kelly AFB, TX 78241

1606 ABW/DEEV
Kirkland AFB, NM 87117-5000

3708 ABG/DE
Lackland AFB, TX 78236-5000

HQ SAC/DEPV
Langley AFB, VA 23665-5001

47 ABG/DE
Laughlin AFB, TX 78843-5000

314 CSG/DE
Little Rock AFB, AR 72099-5000

42 CSG/DEEV
Loring AFB, ME 04751-5000

5D/DEV
Los Angeles AFB, CA 90009

3415 ABG/DE
Lowry AFB, CO 80230-5000

Environmental Office
Luke AFB, CA 85309-5000

56 CSG/DEEV
Macdill AFB, FL 33608

341 CSG/DEEV
Malstrom AFB, MT 59402-5000

22 CSG/DEEV
March AFB, CA 82518-5000

323 CES/DEEV
Mather AFB, CA 95655-5000

HQ AU/DEEV
Maxwell AFB, AL 36112-5001

62 ABG/DEEV
McChord AFB, WA 98438-5436

SM ALC/EM
McClellan AFB, CA 95652-5990

384 CSG/DEEV
McConnell AFB, KS 67221-5000

438 ABG/DE
McGuire AFB, NJ 08641

91 CSG/DEEV
Minot AFB, ND 58705-5000

347 CSG/DEEV
Moody AFB, GA 31699-5000

366 CSG/DEEV
Mt. Home AFB, ID 83648-5000

354 CSG/DEEV
Myrtle Beach AFB, SC 29579-5000

664 DEBB/DESEP
Wallops AFB, NV 89181-5000

3883 ABG/DE
Newark AFB, OH 40357

63 ABG/DEEV
Norton AFB, CA 92409-5965

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Offutt AFB, NE 68113-5001

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509 CSG/DEEV
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Peterson AFB, CO 80914-5001

3SSW/XREE
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1003 CES/DEEV
Peterson AFB, CO 80914-5000

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12 ABG/DE
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Sheppard AFB, TX 76311

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Tyndall AFB, FL 32403-5000

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USAF Academy, CO 80840-5841

71 ABG/DE and NW-DOM
Vance AFB, OK 73705-5000

1 STRAD/ET
Vandenberg AFB, CA 93437-5000

439 ABG/DE
Westover AFB, MA 01022-5000

351 CSG/DEEV
Whiteman AFB, MO 65305-5000

82 ABG/DEEV
Williams AFB, AZ 85240-5045

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Willowgrove AFB, PA 19090

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